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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/752,384 | MCSHERRY, FRANK DAVID | |
| | Examiner | Art Unit | |
| | Khanh B. Pham | 2166 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *27 December 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. **Claims 1, 4, 13-16** are rejected under 35 U.S.C. 103(a) as being as being unpatentable over Kamvar et al. (US 2005/0033742 A1), hereinafter "**Kamvar**", and in view of Jeh et al. ("Scaling Personalized Web Search", Applicant's submitted IDS ), hereinafter "**Jeh**".

Claim 1.

Kamvar discloses:

A system for searching web pages comprising:

a database for storing connectivity information about the web pages [link database, Para [0004], [0007], [0020] and Figs. 1-4; and

a page-grading engine associated with an approximation matrix Q', where Q' approximates an ideal matrix Q with respect to the connectivity information (ranks are good approximation to the actual ranks; page ranks are calculated using N x N link matrix) [matrix, Para [0005], [0007], [0008];

wherein the page-grading engine receives as input a personalization description v describing a set of preferences among the web pages, and grades

search results with respect to Q' and v (customized (or personalized) link matrix B') [ranking (page grading), Para 0025-0027].

Kamvar does not explicitly teach that "non-zero entries of a vector indicative of the personalization description v corresponding at least to a favorite list associated with a user's web browser". However, Jeh teaches a similar personalized Web search including a personalization PageRank vector (PPV) corresponding to a favorite list associated with a user's web browser (i.e. "bookmark") at page 2, 2nd paragraph, wherein "non-zero entries of the vector indicative of the personalization description v " at page 4, 2nd paragraph. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine Jeh with Kamvar's teaching in order to "create "personalized views" of the web, redefining importance according to user preference", where "a user may wish to specify his bookmark as a set of preferred pages, so that any query results that are important with respect to his bookmarked pages would be ranked higher", as suggested by Jeh at page 1

Claim 4.

Kamvar discloses:

A method of grading objects from an interconnected collection of weighted objects, the weights of the objects described by a description v, and the interconnection of the objects described by a description P, the method comprising [Fig 6 Para 20];

applying a grading function Q' to the description v for the objects to determine a

set of grades for the objects (determination of ranks (grading function)) [Para 0018, 0021]; and

assigning at least one object the corresponding determined grade for that object [node ranking, Para 0018];

wherein the grading function Q' approximates an ideal grading function Q, where applying ideal grading function Q to the description v produces ideal grades with respect to description P for every object in the interconnected collection of weighted objects (customized (or personalized) link matrix B') [ranking (page grading), Para 0026-0027].

Kamvar does not explicitly teach that "non-zero entries of a vector indicative of the personalization description v corresponding at least to a favorite list associated with a user's web browser". However, Jeh teaches a similar personalized Web search including a personalization PageRank vector (PPV) corresponding to a favorite list associated with a user's web browser (i.e. "bookmark") at page 2, 2nd paragraph, wherein "non-zero entries of the vector indicative of the personalization description v " at page 4, 2nd paragraph. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine Jeh with Kamvar's teaching in order to "create "personalized views" of the web, redefining importance according to user preference", where "a user may wish to specify his bookmark as a set of preferred pages, so that any query results that are important with respect to his bookmarked pages would be ranked higher", as suggested by Jeh at page 1

Claim 13.

Kamvar discloses:

A system for grading objects from an interconnected collection of weighted objects comprising:

a description v of the weights of the objects [personalization weights v, See Kamvar Para 0026];

a description P of the interconnection of the objects (links between elements) [link matrix (interconnection), See Kamvar Para 0026]; and

an object-grading engine for approximating an ideal grading function Q with an approximate function Q', where applying ideal grading function Q to the description v produces ideal grades with respect to description P for every object in the interconnected collection of weighted objects, and for assigning at least one object the grade produced for that object by an application of Q' to v (customized (or personalized) link matrix B') [ranking (page grading), Para 0026-0027].

Kamvar does not explicitly teach that "non-zero entries of a vector indicative of the personalization description v corresponding at least to a favorite list associated with a user's web browser". However, Jeh teaches a similar personalized Web search including a personalization PageRank vector (PPV) corresponding to a favorite list associated with a user's web browser (i.e. "bookmark") at page 2, 2nd paragraph, wherein "non-zero entries of the vector indicative of the personalization description v " at page 4, 2nd paragraph. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine Jeh with Kamvar's teaching in

order to "create "personalized views" of the web, redefining importance according to user preference", where "a user may wish to specify his bookmark as a set of preferred pages, so that any query results that are important with respect to his bookmarked pages would be ranked higher", as suggested by Jeh at page 1

Claim 14.

Kamvar discloses the elements of claim 13 as above and furthermore it discloses a search engine in connection with the object-grading engine, wherein the object grading engine grades objects passed from the search engine (rank (grade),search results) [Kamvar Para 0031].

Claim 15.

Kamvar discloses the elements of claim 13 as above and furthermore it discloses wherein the objects are web pages [Kamvar Para 0007].

Claim 16.

Kamvar discloses:

A computer-readable medium including computer-executable instructions facilitating the grading of web pages, the web pages interconnected corresponding to a matrix P, computer-executable instructions executing the steps of [Para 0026-0027]:

computing a representation of an approximation, matrix Q' to an ideal matrix Q

(customized (or personalized) link matrix B' from Matrix B) [ranking (page grading), Para [0026]-[0027]; and

applying Q' to a personalization vector v to obtain grades of the web pages (customized (or personalized) link matrix B' from Matrix B; personalization weights v) [ranking (page grading), Para 0026-0027].

Kamvar does not explicitly teach that "non-zero entries of a vector indicative of the personalization description v corresponding at least to a favorite list associated with a user's web browser". However, Jeh teaches a similar personalized Web search including a personalization PageRank vector (PPV) corresponding to a favorite list associated with a user's web browser (i.e. "bookmark") at page 2, 2nd paragraph, wherein "non-zero entries of the vector indicative of the personalization description v " at page 4, 2nd paragraph. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine Jeh with Kamvar's teaching in order to "create "personalized views" of the web, redefining importance according to user preference", where "a user may wish to specify his bookmark as a set of preferred pages, so that any query results that are important with respect to his bookmarked pages would be ranked higher", as suggested by Jeh at page 1

3. Claims 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kamvar and Jeh as applied to claims above, and further in view of Achlioptas ("Fast Computation of Low Rank Approximations", hereinafter "**Achioptas**".

Claim 5.

Kamvar and Jeh disclose the elements of claim 4 as above but does not explicitly indicate "low-rank optimal approximation" . However, Achilotas teaches a method including computation of "low-rank optimal approximation" [see Achlioptas section 1.1 and 3].

It would have been obvious to one of ordinary skill in the art to have combined the cited references because "low-rank optimal approximation" as disclosed by Achlioptas would have enabled Kamvar to capture the degree of freedom of its entries thus retaining only the most pertinent characteristics of the data [See Achlioptas section 1.1].

4. Claims 6-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kamvar, Jeh and Achlioptas as applied to claims above, and further in view of Page (US 6,285,999), hereinafter "Page".

Claim 6.

The combination of Kamvar, Jeh and Achlioptas discloses the elements of claim 5 as discussed above but does not explicitly indicate the element of claim 6. Page discloses the claimed element wherein entry P[i,j] in matrix P represents the probability of reaching one object i from another object j in one step of a random walk among the weighted objects [random jump, probability, See Page Col 5 lines 25-30, Col 6 lines 15-20, 40-43 and Fig 2-3].

Thus, it would have obvious to one of ordinary skill in the art to have combined the cited reference because probability of reaching one object from another object in one step of a random walk (random walk) would have enabled Kamvar to limit the extent to which a document's rank can be inherited by children documents.

Furthermore it helps to model the typical jumping of users to a different place in the web after following a few links [Page Col 6 lines 50-60].

Claim 7.

The combination of Kamvar, Jeh, Achlioptas and Page discloses the elements of claim 6 as above and furthermore Page discloses wherein at each step of the random walk there is a fixed probability c that the walk will reset, and that the random walk then continues from object a with probability v[a] [random jump, probability, See Page Col 5 lines 25-30, Col 6 lines 15-20, 40-43 Fig 2-3].

Claim 8.

The combination of Kamvar, Jeh, Achlioptas and Page discloses the elements of claim 7 as above and furthermore Page discloses wherein the ideal grade of an object b is the probability of arriving at object b at a step of the random walk [random jump, probability, See Page Col 5 lines 25-30, Col 6 lines 15-20, 40-43 Fig 2-3].

Claim 9.

The combination of Kamvar, Jeh, Achlioptas and Page discloses the elements of

claim 5 as above and furthermore Page discloses wherein the objects are web pages [Web, See Page Col 6 lines 50-60].

5. **Claims 1-19** are rejected under 35 U.S.C. 103(a) as being unpatentable over Haveliwala et al. ("An Analytical Comparison of Approaches to Personalizing PageRank"), hereinafter **Haveliwala,** and in view of Jeh et al. ("Scaling Personalized Web Search", Applicant's submitted IDS), hereinafter **"Jeh"**.

**As per claim 1,** Haveliwala teaches a system for searching web pages comprising:

- "a database for storing connectivity information about the web pages" at page 1;

(Haveliwala teaches PageRank database comprises directed Web graph G which stores connectivity information about web pages"

- "and a page-grading engine associated with an approximation matrix Q', where Q' approximates an ideal matrix Q with respect to the connectivity information" at page 1, 1st and 2nd paragraph;

(Haveliwala teaches the "PageRank" for ranking web pages, associated with "low-rank approximations of matrix Q, denoted as Q)

- "wherein the page-grading engine receives as input a personalization description v describing a set of preferences among the web pages, and grades search results with respect to Q' and v" at page 2.

(Haveliwala teaches the personalization vector v which causes bias to prefer certain kinds of pages for use with the matrix Q to create personalizing PageRank vector that allows for personalization on arbitrary sets of pages)

Heveliwala does not explicitly teach that "non-zero entries of a vector indicative of the personalization description v corresponding at least to a favorite list associated with a user's web browser". However, Jeh teaches a similar personalized Web search including a personalization PageRank vector (PPV) corresponding to a favorite list associated with a user's web browser (i.e. "bookmark") at page 2, 2nd paragraph, wherein "non-zero entries of the vector indicative of the personalization description v " at page 4, 2nd paragraph. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine Jeh with Heleliwala's teaching in order to "create "personalized views" of the web, redefining importance according to user preference", where "a user may wish to specify his bookmark as a set of preferred pages, so that any query results that are important with respect to his bookmarked pages would be ranked higher", as suggested by Jeh at page 1.

**As per claim 2**, Haveliwala teaches the system of claim 1 wherein "approximation matrix Q' is a rank-k matrix whose representation comprises a singular

value decomposition comprising matrices V.sub.k, S and U.sub.k.sup.T for a parameter k" at page 3.

**As per claim 3**, Haveliwala teaches the system of claim 2, "wherein v is a vector and Q' times v is an optimal approximation to Q times v over all rank-k matrices" at pages 2-3.

**As per claim 4**, Haveliwala teaches a method of grading objects from an interconnected collection of weighted objects, the weights of the objects described by a description v, and the interconnection of the objects described by a description P, the method comprising: applying a grading function Q' to the description v for the objects to determine a set of grades for the objects; and assigning at least one object the corresponding determined grade for that object; wherein the grading function Q' approximates an ideal grading function Q, where applying ideal grading function Q to the description v produces ideal grades with respect to description P for every object in the interconnected collection of weighted objects, rendering an indication of at least one graded object" at pages 1-3.

Heveliwala does not explicitly teach that "non-zero entries of a vector indicative of the personalization description v corresponding at least to a favorite list associated with a user's web browser". However, Jeh teaches a similar personalized Web search including a personalization PageRank vector (PPV) corresponding to a favorite list associated with a user's web browser (i.e. "bookmark") at page 2, 2nd paragraph, wherein "non-zero entries of the vector indicative of the personalization description v " at

page 4, 2nd paragraph. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine Jeh with Heleliwala's teaching in order to "create "personalized views" of the web, redefining importance according to user preference", where "a user may wish to specify his bookmark as a set of preferred pages, so that any query results that are important with respect to his bookmarked pages would be ranked higher", as suggested by Jeh at page 1.

**As per claim 5**, Haveliwala teaches the method of claim 4 "wherein P, Q, and Q' are matrices, v is a vector, and the approximation is a low-rank optimal approximation" at pages 2-3.

**As per claim 6**, Haveliwala teaches the method of claim 5 wherein "entry P[i,j] in matrix P represents the probability of reaching one object i from another object j in one step of a random walk among the weighted objects" at page 1.

**As per claim 7**, Haveliwala teaches the method of claim 6 wherein "at each step of the random walk there is a fixed probability c that the walk will reset, and that the random walk then continues from object a with probability v[a]" at pages 1-2.

**As per claim 8**, Haveliwala teaches the method of claim 7 wherein "the ideal grade of an object b is the probability of arriving at object b at a step of the random walk" at pages 1-2.

**As per claim 9**, Haveliwala teaches the method of claim 5 wherein "the objects are web pages" at page 1.

**As per claim 10**, Haveliwala teaches amethod of grading objects from an interconnected collection of weighted objects by approximating a matrix Q with respect to a parameter k, comprising: "computing a matrix U.sub.k; computing a matrix V.sub.k; computing a diagonal matrix S; defining the approximation to Q as the matrix product V.sub.k S U.sub.k.sup.T; and determining a grade for at least one of the objects using the approximation to Q; wherein the weights of the objects are described by a vector v, the interconnection of the objects is described by a matrix P, and the ideal grade of object i with respect to matrix P equals Q[i] times v where Q[i] is the ith row of an ideal matrix Q" at pages 1-3.

Heveliwala does not explicitly teach that "non-zero entries of a vector indicative of the personalization description v corresponding at least to a favorite list associated with a user's web browser". However, Jeh teaches a similar personalized Web search including a personalization PageRank vector (PPV) corresponding to a favorite list associated with a user's web browser (i.e. "bookmark") at page 2, 2nd paragraph, wherein "non-zero entries of the vector indicative of the personalization description v " at page 4, 2nd paragraph. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine Jeh with Heleliwala's teaching in order to "create "personalized views" of the web, redefining importance according to user preference", where "a user may wish to specify his bookmark as a set of preferred pages, so that any query results that are important with respect to his bookmarked pages would be ranked higher", as suggested by Jeh at page 1.

**As per claim 11**, Haveliwala teaches the method of claim 10 further comprising: "choosing a sufficiently large parameter d; and computing an intermediate matrix M with respect to P; wherein matrix U.sub.k, comprises the k principal eigenvectors of dI-MM.sup.T and matrix V.sub.k comprises the k principal eigenvectors of dI-M.sup.TM, and wherein matrix S=(dI-D).sup.-1/2, where D is the diagonal matrix comprising the k eigenvalues corresponding to the k principal eigenvectors of dI-MM.sup.T" at pages 2-3.

**As per claim 12**, Haveliwala teaches the method of claim 11 wherein "computing an intermediate matrix M with respect to P is further with respect to a constant c" at page 2.

**As per claim 13**, Haveliwala teaches a system for grading objects from an interconnected collection of weighted objects comprising: "a description v of the weights of the objects; a description P of the interconnection of the objects; and a processor comprising an object-grading engine for approximating an ideal grading function Q with an approximate function Q', where applying ideal grading function Q to the description v produces ideal grades with respect to description P for every object in the interconnected collection of weighted objects, and for assigning at least one object the grade produced for that object by an application of Q' to v" at pages 1-3.

Heveliwala does not explicitly teach that "non-zero entries of a vector indicative of the personalization description v corresponding at least to a favorite list associated with a user's web browser". However, Jeh teaches a similar personalized Web search including a personalization PageRank vector (PPV) corresponding to a favorite list

associated with a user's web browser (i.e. "bookmark") at page 2, 2nd paragraph, wherein "non-zero entries of the vector indicative of the personalization description v " at page 4, 2nd paragraph. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine Jeh with Heleliwala's teaching in order to "create "personalized views" of the web, redefining importance according to user preference", where "a user may wish to specify his bookmark as a set of preferred pages, so that any query results that are important with respect to his bookmarked pages would be ranked higher", as suggested by Jeh at page 1.

**As per claim 14**, Haveliwala teaches the system of claim 13 "further comprising a search engine in connection with the object-grading engine, wherein the object-grading engine grades objects passed from the search engine" at page 1.

**As per claim 15**, Haveliwala teaches the system of claim 13 wherein "the objects are web pages" at page 1.

**As per claim 16**, Haveliwala teaches "a computer-readable storage medium including computer-executable instructions facilitating the grading of web pages, the web pages interconnected corresponding to a matrix P, computer-executable instructions executing the steps of: computing a representation of an approximation matrix Q' to an ideal matrix Q; and applying Q' to a personalization vector v to obtain grades of the web pages" at pages 1-3.

Heveliwala does not explicitly teach that "non-zero entries of a vector indicative of the personalization description v corresponding at least to a favorite list associated

with a user's web browser". However, Jeh teaches a similar personalized Web search including a personalization PageRank vector (PPV) corresponding to a favorite list associated with a user's web browser (i.e. "bookmark") at page 2, 2nd paragraph, wherein "non-zero entries of the vector indicative of the personalization description v " at page 4, 2nd paragraph. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine Jeh with Heleliwala's teaching in order to "create "personalized views" of the web, redefining importance according to user preference", where "a user may wish to specify his bookmark as a set of preferred pages, so that any query results that are important with respect to his bookmarked pages would be ranked higher", as suggested by Jeh at page 1.

**As per claim 17**, Haveliwala teaches the computer-readable medium of claim 16 "wherein Q' is a rank-k matrix whose representation comprises a singular value decomposition comprising matrices V.sub.k, S and U.sub.k.sup.T for a parameter k" at pages 2-3.

**As per claim 18**, Haveliwala teaches the computer-readable medium of claim 17 "wherein Q' times v is an optimal approximation to Q times v over all rank-k matrices" at pages 1-3.

**As per claim 19**, Haveliwala teaches the computer-readable medium of claim 17, "the computer-executable instructions further executing the steps of: applying the grading of web pages produced by Q' to the results of a search query; and outputting the results of the search query sorted according the grading" at page 1.

***Response to Arguments***

6. Applicant's arguments filed December 27, 2007 have been fully considered but they are not persuasive. The examiner respectfully traverses applicant's arguments.

**Claims rejections - 35 U.S.C. §102 in view of Kamvar:**

Applicant's arguments with respect to the limitation "non-zero entries of ... vector ... v corresponding to at least a favorite list associated with a user's web browser" have been considered but are moot in view of the new ground of rejection. The Jeh reference teaches a similar personalized Web search including a personalization PageRank vector (PPV) corresponding to a favorite list associated with a user's web browser (i.e. "bookmark") at page 2, 2nd paragraph, wherein "non-zero entries of the vector indicative of the personalization description v " at page 4, 2nd paragraph.

Applicant further argued that Kamvar does not disclose "a page-grading engine", the examiner respectfully disagrees. First, it is well known that every search engine has a page ranking engine to rank the search result, for example, applicant's specification at [0034] states that "**modern search engines often grade or "rank"** pages based on presumed relevance to the user by using, for example, an incorporated **page ranking engine 228**". Kamvar teaches at [0005] the step of raking relevance of search result according to their rank and therefore teaches "a page-grading engine". Second, Kamvar teaches at [0030] and Fig. 6 a system for computing ranks of nodes in a linked database, which corresponds to the claimed "page-grading engine".

**Claims rejections- 35 U.S.C. §102 in view of Haveliwala.**

Applicant's arguments with respect to the limitation "non-zero entries of … vector … v corresponding to at least a favorite list associated with a user's web browser" have been considered but are moot in view of the new ground of rejection. The Jeh reference teaches a similar personalized Web search including a personalization PageRank vector (PPV) corresponding to a favorite list associated with a user's web browser (i.e. "bookmark") at page 2, 2nd paragraph, wherein "non-zero entries of the vector indicative of the personalization description v " at page 4, 2nd paragraph.

In response to applicant' argument that " it is not clear how Haveliwala is being interpreted to teach "a database for storing connectivity information", the examiner respectfully submits that Haveliwala teaches at page 1 the PageRank algorithm, which is a popular algorithm used by Google search engine to analyze connectivity information between Web pages. The result the of the analysis such as link matrix is stored in a database which is used by the search engine in response to user's query. Similar to the claimed "matrix Q with respect to the connectivity information", Haveliwala teaches the step of "computing Pagerank" which produce the link matrices E, A, which correspond to the claimed "database storing connectivity information about the web pages".

Applicant further argued that it is not clear how Haveliwala being interpreted to teach "a page grading engine" as claimed. On the contrary, Heveliwala clearly teaches the "Personalizing PageRank" algorithm which calculate ranking for web pages corresponding to search result using personalization vector v as input.

Regarding claim 2, applicant argued that it is not clear how Haveliwala is being interpreted to teach "approximation matrix Q' is a rank-k matrix whose representation comprise a singular value decomposition comprising matrices $V_k$, S and $U_k^T$ for parameter k". On the contrary, Haveliwala teaches at page 2 the step of computing "low-rank approximations of Q, denoted as Q^" (i.e. "approximation matrix Q' is a rank-k matrix") using "only k<= n personalize vector (i.e, "$V_k$") and x(w), wherein x(w) = $cP^Tx$ + (1-c)v (see equation (3) , page 2). The examiner therefore maps $P^T$ to the claimed $U_k^T$ and v to the claimed matrix S.

***Conclusion***

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Khanh B. Pham whose telephone number is (571) 272-4116. The examiner can normally be reached on Monday through Friday 7:30am to 4:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hosain Alam can be reached on (571) 272-3978. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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